

REMARKS

Claims 1-3 and 5-10 are pending.

By this Preliminary Amendment, Claims 6-10 are added.

Applicants respectfully submit that no new matter is presented herein.

In view of the above, and in light of the comments provided in the Advisory Action dated August 7, 2006, Applicants respectfully submit that this Preliminary Amendment, taken into consideration with the Response dated July 14, 2006, places the instant application in condition for allowance.

Prompt and favorable examination on the merits is respectfully requested.

Claims 1-3 and 5-10 Recite Allowable Subject Matter

A. Claims 1-3 and 5

The Office Action dated April 5, 2006 rejected Claims 1-3 and 5 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 6,383,361 to Moulthrop, Jr. et al. (Moulthrop) in view of U.S. Patent Number 5,635,039 to Cisar et al. (Cisar), or further in view of U.S. Patent Number 3,720,164 to Casson, Jr. Also, Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moulthrop in view of Cisar and Casson, and further in view of U.S. Patent Number 5,460,705 to Murphy et al.

Applicants respectfully traverse the rejections for the following reasons.

Claim 1 recites a water electrolysis system including a water electrolysis means including a pair of catalyst layers and an electrolyte membrane sandwiched by both of the catalyst layers, for electrolyzing pure water supplied to the catalyst layers, and for generating hydrogen from one catalyst layer and a gas/liquid mixture of oxygen and pure water from the other catalyst layer; a gas/liquid separating means for separating

pure water from the gas/liquid mixture of oxygen and pure water both brought out from the water electrolysis means; and a backflow means for making the pure water, separated by the gas/liquid separating means, flow back to the water electrolysis means; wherein the gas/liquid separating means is directly connected to a discharge opening through which the gas/liquid mixture of oxygen and pure water is brought out from the water electrolysis means without any intermediate piping; wherein the gas/liquid separating means comprises an intake opening for mint pure water to be supplied to the water electrolysis means after merging with recovered pure water within the gas/liquid separating means, and wherein the gas/liquid mixture directly flows into the gas/liquid separating means through the discharge opening.

In addition to the arguments presented in the *Remarks* section of the Response dated July 14, 2006, which has been entered into the record with the filing of the RCE with which the instant Preliminary Amendment is also being filed, Applicants provide the following arguments with respect to the patentability of Claims 1-3 and 5 over the art of record.

Applicants note that in the present invention, mint pure water (H_2O) flows into the gas/liquid separating means from the intake opening. In Moulthrop, hydrogen saturated water ($\text{H}_2 + \text{H}_2\text{O}$) flows into the tank (82).

In the present invention, water (H_2O) is purified with the aid of an ion exchange resin, which is disposed inside the purifying unit in which the ions contained in the water (H_2O) are removed by the ion exchange resin. In Moulthrop, once the oxygen/water mixture ($\text{H}_2\text{O} + \text{O}_2$) is introduced to the tank (82), hydrogen and oxygen react in the catalyst bed (81), and the water is deionized by the catalyst (85) distributed throughout

the catalyst bed (81) (see column 3, lines 3-17 of Moulthrop). Applicants respectfully point out that while the difference may appear to be subtle to the casual observer, the method and corresponding structure disclosed in Moulthrop is related to "ion neutralization" whereas the method and structure of the present invention is directed to "ion removal."

As was mentioned in the July 14 Response, Applicants respectfully point out that the gas/liquid separating means of the present invention is directly connected to a discharge opening through which the gas/liquid mixture of oxygen and pure water ($H_2 + H_2O$) is brought out from the water electrolysis means without any intermediate piping. Applicants maintain that Moulthrop fails to disclose or suggest such a structural arrangement/feature.

Cisar is applied for teaching an electrochemical cell used as a water electrolyzer as well as a pair of catalyzed electrodes separated by a proton exchange membrane. Therefore, Applicants respectfully submit that Cisar fails to overcome or otherwise address the above-described deficiencies of Moulthrop.

Casson is applied for teaching the use of purified water in making corrosion resistant metallic lithographic plates as well as metal pipings and vessels are known to cause contaminations in water. Therefore, Applicants respectfully submit that Casson fails to overcome or otherwise address the above-described deficiencies of Moulthrop.

Murphy is applied for teaching a water electrolyzer producing ozone, wherein the electrolyzer includes a cell stack of proton exchange membrane separated catalyst coated anodes and cathodes, as well as a gas/liquid separation tank equipped with an

intake pipe for de-ionized water. Therefore, Applicants respectfully submit that Murphy fails to overcome or otherwise address the above-described deficiencies of Moulthrop.

To establish *prima facie* obviousness, each feature of a rejected claim must be taught or suggested by the applied art of record. See M.P.E.P. §2143.03. As explained above, Moulthrop, Cisar, Casson, and Murphy, alone or in any combination, fail to teach or suggest each and every feature recited by Claim 1. Therefore, Applicants respectfully submit Claim 1 is not rendered obvious by the teachings of Moulthrop, Cisar, Casson and Murphy.

Accordingly, Applicants respectfully submit Claim 1 should be deemed allowable for the reasons discussed above.

Claims 2-3 and 5 depend from Claim 1. It is respectfully submitted that these dependent claims should be deemed allowable for the same reasons Claim 1 is allowable, as well as for the additional subject matter recited therein.

Applicants respectfully request withdrawal of the rejections.

B. Claims 6-10

Applicants respectfully submit Claims 6-10 are allowable over the art of record for the reasons discussed during the personal interview conducted on June 21, 2006, which are presented below for the convenience of the Examiner.

Claim 6 recites a water electrolysis system including, among other features, purifying means that are **only** in communication with a water electrolysis means and a gas/liquid separating means.

Applicants respectfully submit that the applied art of record does not teach or suggest each and every feature recited by Claim 6.

For example, as was noted during the personal interview, Moulthrop specifically discloses the purifying means or phase reduction tank (82) is in communication with the water electrolysis means (61), the gas/liquid separating means (100), the high pressure hydrogen/water separator (62) and the oxygen gas line (71). Therefore, Applicants respectfully submit that the purifying means (82) taught by Moulthrop is not only in communication with the water electrolysis means (61) and the gas/liquid separating means (100), because the purifying means (82) is also in communication with other elements, namely, the high pressure hydrogen/water separator (62) and the oxygen gas line (71).

Cisar is applied for teaching an electrochemical cell used as a water electrolyzer as well as a pair of catalyzed electrodes separated by a proton exchange membrane. However, Applicants note Cisar fails to teach or suggest purifying means that are **only** in communication with a water electrolysis means and a gas/liquid separating means.

Casson is applied for teaching the use of purified water in making corrosion resistant metallic lithographic plates as well as metal pipings and vessels are known to cause contaminations in water. However, Applicants note Casson fails to teach or suggest purifying means that are **only** in communication with a water electrolysis means and a gas/liquid separating means.

Murphy is applied for teaching a water electrolyzer producing ozone, wherein the electrolyzer includes a cell stack of proton exchangemembrane separated catalyst coated anodes and cathodes, as well as a gas/liquid separation tank equipped with an intake pipe for deionized water. However, Applicants note Murphy fails to teach or

suggest purifying means that are **only** in communication with a water electrolysis means and a gas/liquid separating means.

To establish *prima facie* obviousness, each feature of a rejected claim must be taught or suggested by the applied art of record. See M.P.E.P. §2143.03. As explained above, Moulthrop, Cisar, Casson, and Murphy, alone or in any combination, fail to teach or suggest each and every feature recited by Claim 6. Therefore, Applicants respectfully submit Claim 6 is not rendered obvious by the teachings of Moulthrop, Cisar, Casson and Murphy.

Accordingly, Applicants respectfully submit Claim 6 should be deemed allowable for the reasons discussed above as well as during the June 21 personal interview.

Claims 7-10 depend from Claim 6. It is respectfully submitted that these dependent claims should be deemed allowable for the same reasons Claim 6 is allowable, as well as for the additional subject matter recited therein.

Conclusion

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of Claims 1-3 and 5-10, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 101175.00034.**

Respectfully submitted,
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